NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Toward a Climate-Smart Nation

Every day, communities and businesses grapple with environmental challenges due to unusual or extreme climate and weather conditions. They turn to NOAA for science information to help them address these challenges.

Americans' health, security, and economic well-being are tied to weather and climate. In the last 2 years, the United States experienced 25 climate- and weather-related disasters each exceeding $1 billion ($115 billion total) in damages and claiming 1,019 lives. The public, businesses, resource managers, and policy leaders are increasingly asking for information to help them understand how and why climate conditions are changing and how they can prepare.

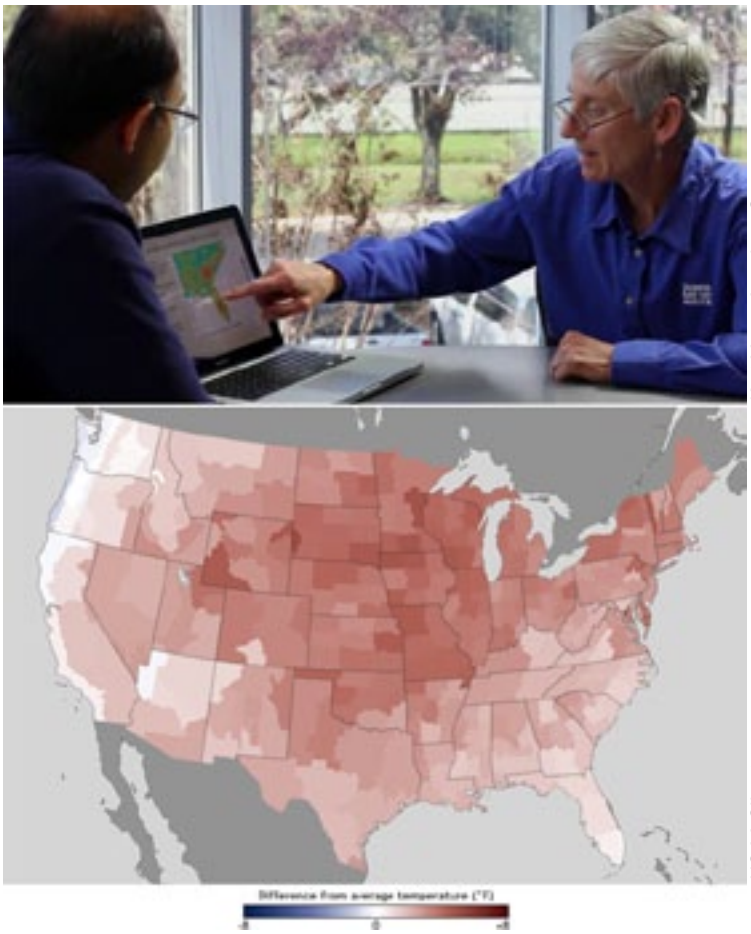
The National Oceanic and Atmospheric Administration (NOAA) is a primary provider of climate science, data, tools, and information used by stakeholders and citizens in decision-making contexts. These resources are supported by our strong foundation in science—including global climate observation and monitoring networks; world-renowned scientists; and state-of-the-art climate models.

NOAA works with partners and the public to build a climate-smart nation that is resilient to climate and weather extremes, and long-term changes. Drawing upon NOAA's foundation in science, our objectives are to:

- reduce vulnerability to extreme weather;
- prepare for drought and long-term water resource challenges;
- protect and preserve coasts and coastal infrastructure;
- identify and manage risks to marine ecosystems and the services they provide; and
- mitigate and adapt to climate impacts.

Information Products for Decision Makers

NOAA's observation systems are a vital part of a global effort to monitor Earth's climate. The resulting data and knowledge help us develop information products and early warning systems that decision makers need at relevant scales of time (days to decades) and space (local to global). Our information enhances society's ability to plan and respond, increases innovation and development of products used by the private sector, and strengthens the nation's economy. NOAA products and initiatives serve to answer three basic questions…



Kurt Mann, American Green

NOAA Climate.gov

Water treatment managers in Tampa Bay are using climate models to help them make smarter decisions (top). 2012 was a record-setting year in terms of warmer-than-average temperature (bottom).

"How are climate and weather changing?"

Climate change is apparent now across our nation; and natural climate patterns, like El Niño, can have a major impact on weather. NOAA works with partners across sectors to provide useful and timely climate information. Without NOAA's long-term climate monitoring, research, and modeling capabilities we couldn't quantify where and how climate conditions have changed, nor could we predict where and how they're likely to change. We provide critical early warning systems and forecasts from days to decades and on local to global scales.

For example:

- The U.S. Drought Monitor provides up-to-date assessments of drought conditions by experts across federal agencies and other institutions.
- The Climate Prediction Center's Seasonal Climate Outlooks alert Americans to where temperatures and precipitation are likely to be well above or well below normal.
- The annual State of the Climate Report presents a detailed, peer-reviewed update on global climate indicators and notable weather events in the U.S. and around the world.

"How are climate-related changes impacting my community?"

Across the country, the places we live, visit, and value are threatened by a changing climate. NOAA delivers regionally relevant climate information to decision makers and works with them to develop and implement action plans for reducing risks and minimizing climate impacts. For example:

- Eleven Regional Integrated Sciences and Assessments (RISA) teams and Regional Climate Centers coordinate with local, tribal, state, regional, and federal partners to produce region-specific data products, tools, training opportunities, and resources.
- The Coastal Services Center's Digital Coast website includes tools, training, case studies, and information that help users incorporate climate data into coastal management decisions.
- NOAA and its partners meet with communities across the country to plan for and respond to extreme events.

"What changes can we expect in the future?"

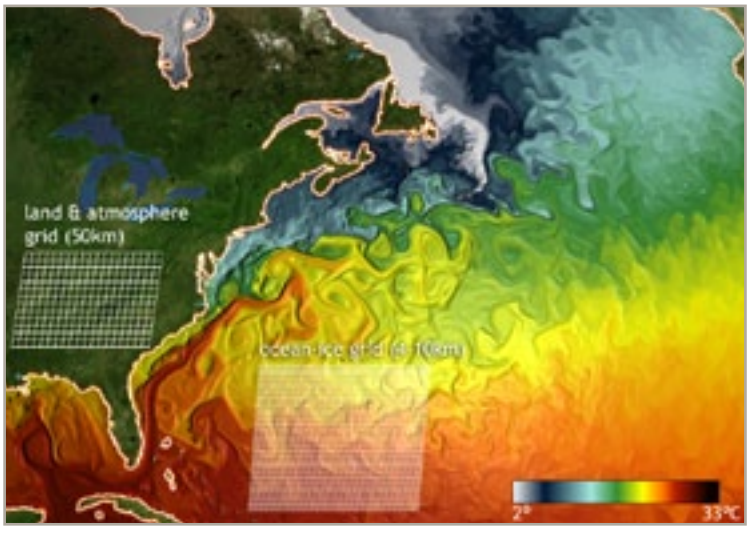
NOAA seeks to quantify and assess how and where climate conditions have changed and to predict how they are likely to change in the future. We are working with our partners to improve climate models for regional and local decision-making. Here are some examples of how we are informing decisions with world-class science:

- NOAA collaborates with scientists, nationally and internationally, to collect critical atmosphere and ocean data to use in state-of-the-art models to improve weather and climate predictions used worldwide.
- NOAA's Climate Program Office recently released a Global Sea Level Rise report which estimates sea level changes over the next century based on the most up-to-date science. This report allows decision makers to consider multiple future scenarios and develop appropriate response options.
- A NOAA-funded project at the Florida Water Institute has linked researchers and water utilities from across the Southeast to co-develop actionable climate and sea level rise predictions at relevant space, time, and event scales.
- Pacific RISA researchers produced a comprehensive assessment report on the current state of knowledge about climate change impacts on the Hawaiian archipelago and U.S.-affiliated Pacific Islands as well as current adaptive capacity in the region.

Toward a Climate-Smart Nation

NOAA is a trusted source of climate data and information products that are crucial to helping the public and decision makers understand and respond to climate-related challenges. By providing data and information, accurate forecasts, and working with partners across the country, NOAA is helping create a climate-smart nation that can make more informed decisions.

Visit us online at Climate.gov, where we provide public-friendly access to climate data and information. Climate.gov provides an array of resources for schools and other educational institutions; decision support tools for businesses and communities; maps and data products to increase understanding of changing climate conditions; and inspiring stories about scientists and climate-smart citizens in action.



Remik Ziemlinski, NOAA GFDL

NOAA's increased computing capacity allows scientists to understand and predict the exchange of water and energy between the ocean and atmosphere at much finer scales, thereby improving their ability to simulate regional climate.